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**Miller et al.**

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(54) **DEVICE AND METHOD FOR IDENTIFYING  
A CHANGE IN A PREDETERMINED  
CONDITION**

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2/455; 250/472.1

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See application file for complete search history.

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(56) **References Cited**

U.S. PATENT DOCUMENTS

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2,949,880 A \* 8/1960 Fromer ..... G01J 1/50  
250/474.1  
3,903,423 A \* 9/1975 Zweig ..... A61B 5/0059  
250/473.1

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FOREIGN PATENT DOCUMENTS

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(57) **ABSTRACT**

In an embodiment, a device and method for identifying a change in a predetermined condition. The device is a patch injected with ink that transforms in response to a change in the predetermined condition, such as, a change in temperature or change in the ultraviolet (UV) index level. The ink includes thermochromic ink that transforms or identifiably changes based on a change in a temperature condition, and/or photochromic ink that transforms or identifiably changes based on a change in an UV index level condition. When temperature increases or decreases to reach one or more threshold temperature values, the thermochromic ink transforms in an identifiable manner to indicate a condition has be met. When the UV index level increase or decrease to reach one or more threshold UV index levels, the photochromic ink transforms in an identifiable manner to indicate that a condition has be met.

(52) **U.S. Cl.**  
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